

Remarks

This Application has been carefully reconsidered in light of the Office Action of October 24, 2002. By this amendment, claims 11, 12, 29 and 30 have been cancelled in order to avoid any possible redundancy or inconsistency with their respective parent claims. In addition, independent claims 1, 31 and 32 have been amended in order to specifically recite in the body of each claim that the surface layer and core layer are biaxially oriented and coextruded. This amendment to the claims is made in order to ensure that this feature of the claimed subject matter appears not only in the preamble of each claim, but also in the body of the claim. Reconsideration and allowance of this application is respectfully requested in view of the foregoing amendments and the following remarks:

Before responding specifically to the several rejections, it may be helpful to summarize the claimed subject matter in relation to the prior art references. The invention in its simplest form involves a coextruded core layer and surface layer incorporated in a multilayer biaxially oriented film in which the surface layer comprises a heat-sealable thermoplastic polymer and the coextruded core layer is formed of a ethylene-propylene isotactic copolymer incorporating a very small amount of ethylene (1% or less) which is effective to provide an enhancement in inter-layer bond strength of at least 15%. This enhancement in inter-layer bond strength is measured against the corresponding inter-layer bond strength resulting from a film formed from a core layer of an isotactic polypropylene homopolymer. The concept of providing an ethylene propylene copolymer of isotactic structure having a very small amount of ethylene to enhance the interlayer bond strength is not found in any of the prior art references nor in any of the proposed combination of prior art references.

Turning now to the specific prior art rejections, the rejection of claims 1, 2, 4, 6-12 and 27-32 under 35 USC 102 as anticipated by Isaka et al is respectfully traversed. Applicant's claims call for a biaxially oriented polyolefin film in which the core layer and the heat-sealable surface layer are coextruded and biaxially oriented. The patent to Isaka in the portion of the specification referenced in the Office Action, column 8, line 55 – column 9, line 41, discloses separately extruded film layers, one of which may be biaxially oriented and the other which can be independently uniaxially oriented or biaxially oriented. This mode of forming the multilayer film would clearly preclude a core layer coextruded with the surface layer with the multilayer film being biaxially oriented. While the original recitation in the independent claims of a biaxially oriented film would, in applicant's view, require biaxial orientation of each of the surface and core layers, independent claims 1, 31 and 32 have been amended to specifically recite a "biaxially oriented surface layer" and a "biaxially oriented core layer".

In addition, to the requirement of coextruded biaxially oriented film layers, the claims require an enhancement in interlayer bond strength between the surface layer and core layer as measured against a corresponding isotactic polypropylene homopolymer of at least 15% in independent claim 1, 30% in independent claim 32, and 50% as set forth in independent claim 31.

The patent to Isaka et al fails to disclose an enhancement in interlayer bond strength between the surface and core layers, as required in applicants' claims. Moreover, Isaka contains no disclosure of any kind respecting the interlayer bond strength between the surface and core layers of the reference. As noted previously, Isaka does disclose the use of an ethylene/propylene copolymer which preferably has an ethylene content of 2.5 to 6% by weight

in order to provide good heat-sealability. This is generally consistent with the data shown in Figure 3 of the reference, which indicates an enhancement in heat-seal strength occurring at an ethylene content of about 3.5-4.0%. The reference goes on in the last full paragraph of column 6 to suggest a preferred ethylene content of 3.6 to 10 wt.%.

As stated above, Isaka contains no disclosure respecting the enhancement of interlayer bond strength. To the extent the rejection is based upon Example 10 of Isaka et al and an assessment that this Example would inherently produce enhancement in interlayer bond strength as required in the claims, applicants would respectfully disagree. As noted previously in the prosecution of this application, case law as summarized in MPEP § 2112 establishes that, in order to support an alleged inherency of claimed subject matter, it must be shown that the inherency is necessarily present and not a mere possibility. Here, there is no such showing and particularly with respect to Example 10 of Isaka et al, there is clearly no reason to expect an enhancement in interlayer bond strength as required in applicants' claims. In this respect, contrary to the subject matter called for in applicants' claims, Example 10 does not disclose a multilayer biaxially oriented film, nor does it disclose coextruded core and surface layers as now specifically set forth in the claims. In Example 10, the base layer (A) is extruded and oriented in the machine direction. The layer (B) is separately formed and applied to the machine direction oriented base layer, and the composite layers are then stretched transversely. Thus, the result is not a multilayer biaxially oriented film, as specified in applicants' claim, nor does it involve a coextruded multilayer film as required in the claims.

With respect to the apparent argument in the Office Action that the disclosure in Isaka of an ethylene/propylene copolymer having a maximum ethylene content of 7 weight percent would

anticipate or render obvious applicant's claimed ranges of 1% or less or .05-0.8, 0.3-0.5, 0.5-0.7 or 0.1-0.2% as more specifically set forth in applicant's claims, applicant would respectfully disagree. It is believed to be well settled that the existence in the prior art of a broad range which might encompass a claimed narrower range does not in itself establish anticipation or novelty of such narrower range. In this regard, attention is respectfully invited to *In re Russell*, 169 USPQ 426, CCPA (1971) wherein the court in reversing the rejection of the claims stated:

Essentially, applicant's contention is that the employment of the proportions recited in the claims unexpectedly yields clear compositions without the need for a filtration step. Applicant's position on the law is sound, for even though part of applicant's range of proportions, and all of his ingredients, are suggested by the broad teaching of Wei, if applicant can establish that his relatively narrow ranges yield unexpectedly superior results as against the broad Wei ranges as a whole, applicant will have established unobviousness of the claimed invention. *See In re Luvisi*, 51 CCPA 1063, 343 F.2d 102, 144 USPC 646 (1965); *In re Neave*, 54 CCPA 999, 370 F.2d 961, 152USPQ 274 (1967).

For a similar holding, reference is made to *In re Waymouth and Koury*, 182 USPQ 290 CCPA (1974). In this case, the claims on appeal were directed to a lamp having an arc tube containing halogen in mercury atoms present in a ratio of 0.08 to 0.75. The prior art reference disclosed a similar device containing halogen and mercury atoms. The calculated ratio of halogen to mercury atoms inherently disclosed in the reference ranged from 0.0000001 to 1.3. Although the prior art range enveloped the narrower range claimed by the appellant there, the court reversed the rejection of the claims in view of the unexpectedly superior results achieved by operating within the claimed range. For further decisions of the Board of Patent Appeals and Interferences on the issue of claimed ranges, reference is made to the companion cases of *Ex parte Peterson*, 228 USPQ 216 (1985) and *Ex parte Peterson*, 228 USPQ 217 (1985).

In the present case, similarly as in the above cited decisions, applicant's invention involves the use of very narrow range of ethylene content to produce enhanced interlayer bond strengths which are not taught by the prior art and which clearly are unexpectedly superior results which are not recognized by the prior art.

The rejection of claim 1, 2, 4, 6-12, and 27-32 under 35 U.S.C. § 102(e) as anticipated by Patent No. 6,063,482 to Peiffer is respectfully traversed. It is noted that the patent to Peiffer is directed to a polypropylene film that may be single ply or multiply which is configured to have improved tear propagation resistance. To the extent that Peiffer involves a multilayer film, it does not call for a surface layer capable of forming an effective heat-seal as required in each of applicants' claims. In fact, Peiffer makes absolutely no reference to heat-sealability of the surface layer of a multilayer film. Further and as noted previously, the nature of the products, in which the improved tear propagation resistance achieved in Peiffer is employed, would include products such as tapes and insulating materials. Clearly, there would be no reason for such products to have a heat-sealability characteristic as specified in applicants' claim.

The patent to Peiffer is also devoid of any reference to interlayer bond strength. Further, the patent to Peiffer contains no disclosure of a multilayer film incorporating a core layer that is treated in any respect to enhance the interlayer bond strength. Clearly, Peiffer does not disclose the use of an ethylene/propylene copolymer as a core layer in a biaxially oriented multi-layer film in which the ethylene content is 1 wt.% or less as specified in claim 1 or within the other low levels of ethylene content as specified in claims 4, 6, 7, 28, and 32. In fact, in Peiffer, where ethylene is present in a multilayer film, it is present in a top layer and not in the base layer.

Where only a single-ply film is involved, ethylene may be present, in much broader and greater concentrations than employed in the core layer of applicants' invention.

To the extent that the Examiner relies upon an inherency argument with respect to either the heat-sealing characteristics of the surface layer or the interlayer bond strength, applicants would refer to the above-discussed MPEP § 2112. It is again noted that inherency cannot be established by a mere allegation that a particular characteristic may possibly be present. Thus, the statement found in MPEP Section 2112:

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. (Emphasis original.)

is fully applicable here. This is particularly so in the present case since there is no disclosure in Peiffer of a multilayer film employing a core layer involving an isotactic propylene copolymer containing no more than 1 wt.% ethylene. In regard to the comments made on pages 8 and 9 of the Office Action regarding MPEP § 2112, it is noted, as indicated above, that there is no prior art product appearing to be substantially identical to the claimed products.

The rejections of claims 1, 2, 4, 6-12, and 27-32 as obvious over Isaka or Pieffer in view of Agarwal further in view of Lohmann are respectfully traversed. Applicants would respectfully submit that there is no basis, absent applicants' own teaching, to combine the teachings of Agarwal with either of the primary references. The patent to Agarwal, as it is understood, does not appear to disclose that the layer thicknesses of multilayer films are result-effective variables, be it water vapor or moisture vapor transmissibility or other characteristics. Agarwal et al appear to propose the use of polymers having very low crystallinity, ranging from

a high value of 50-70% down to a low value of 10-30%. The polymers involved may be homopolymers or copolymers of ethylene and higher alpha olefins, such as hexene. Where ethylene is involved as a copolymer, the minimum ethylene content appears to be about 2% or higher, significantly greater than the maximum ethylene content involved in applicants' invention. Thus, even if the teachings of Agarwal were to provide a basis for routine experimentation to optimize ethylene content, the experimentation would be conducted at ethylene levels well above those called for in applicants' claims. Thus, to the extent that one of ordinary skill in the art might attempt to combine the teachings of Agarwal with the primary references, the result would be to lead one skilled in the art away from the claimed subject matter.

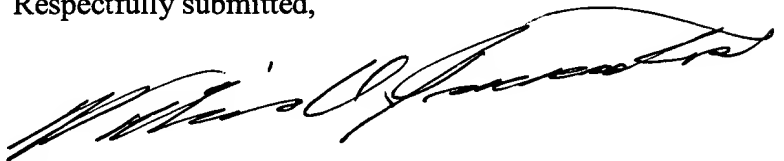
When the tertiary reference Lohmann is considered, the combined teachings of the references would still lead away from applicant's invention. It will be recalled that in Applicant's invention, a core layer formed of an ethylene/propylene copolymer with the requisite ethylene content is employed to provide an enhancement of interlayer bond strength. In Lohmann, various coatings are applied to a core layer formed of isotactic polypropylene. The surface layers make take the form of an isotactic polypropylene containing up to a 15 weight percent of non-isotactic polypropylene, i.e., atactic polypropylene, or up to a 15% by weight of ethylene or apparently copolymers of propylene and ethylene. There would appear to be no basis, absent the teachings found in Applicant's specification to attempt to combine the teachings of the Lohmann and Agarwal references with either Isaka or Pieffer. However, if they are combined, the result would apparently be a multilayer film in which the surface layer, not the core layer, is modified with the addition of atactic polypropylene or ethylene in amounts of up to 15 weight percent. Further, in Lohmann, as in the other references as discussed previously, the

disclosed multilayer film is not a multilayer biaxially oriented film as required in Applicant's invention. Apparently, in Lohmann the core layer of isotactic polypropylene is biaxially oriented followed by the application of a surface layer as discussed above.

For the reasons advanced above, it is respectfully submitted that all of the claims herein are patentable over the prior art. Accordingly, an early reconsideration and allowance of this Application is respectfully requested.

The Commissioner is hereby authorized to charge our Deposit Account No. 12-1781 for any fee that may be due in connection with this communication.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'William D. Jackson', written in a cursive style.

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Attachment to Response (Amendment) Office Action of October 24, 2002:

In the Claims

1. In a multi-layer biaxially oriented polyolefin film, the combination comprising:
 - a. a **biaxially oriented** surface layer of said film comprising a thermoplastic polymer capable of forming a heat seal with a corresponding thermoplastic polymer upon heating to an elevated temperature and compression; and
 - b. a **biaxially oriented** core layer contiguous to and coextruded with said surface layer, said core layer having a thickness greater than said surface layer, said core layer formed of ethylene-propylene copolymer having an isotactic structure and containing ethylene in an amount of no more than one weight percent which is effective to provide an inter-layer bond strength with said surface layer which is at least 15 percent greater than the inter-layer bond strength between said surface layer and a film formed of isotactic polypropylene homopolymer.

31. In a multi-layer biaxially oriented polyolefin film, the combination comprising:

a. a **biaxially oriented** surface layer of said film comprising a thermoplastic polymer capable of forming a heat seal with a corresponding thermoplastic polymer upon heating to an elevated temperature and compression; and

b. a **biaxially oriented** core layer contiguous to and coextruded with said surface layer, said core layer having a thickness greater than said surface layer, said core layer formed of ethylene-propylene copolymer having an isotactic structure and containing ethylene in an amount of no more than one weight percent which is effective to provide an inter-layer bond strength with said surface layer which is at least 50 percent greater than the inter-layer bond strength between said surface layer and a film formed of isotactic polypropylene homopolymer.

32. In a multi-layer biaxially oriented polyolefin film, the combination comprising:

a. a biaxially oriented surface layer of said film comprising a thermoplastic polymer capable of forming a heat seal with a corresponding thermoplastic polymer upon heating to an elevated temperature and compression; and

b. a biaxially oriented core layer contiguous to and coextruded with said surface layer, said core layer having a thickness greater than said surface layer, said core layer formed of ethylene-propylene copolymer having an isotactic structure and containing ethylene in an amount between 0.3 and 0.5 weight percent which is effective to provide an inter-layer bond strength with said surface layer which is at least 30 percent greater than the inter-layer bond strength between said surface layer and a film formed of isotactic polypropylene homopolymer.